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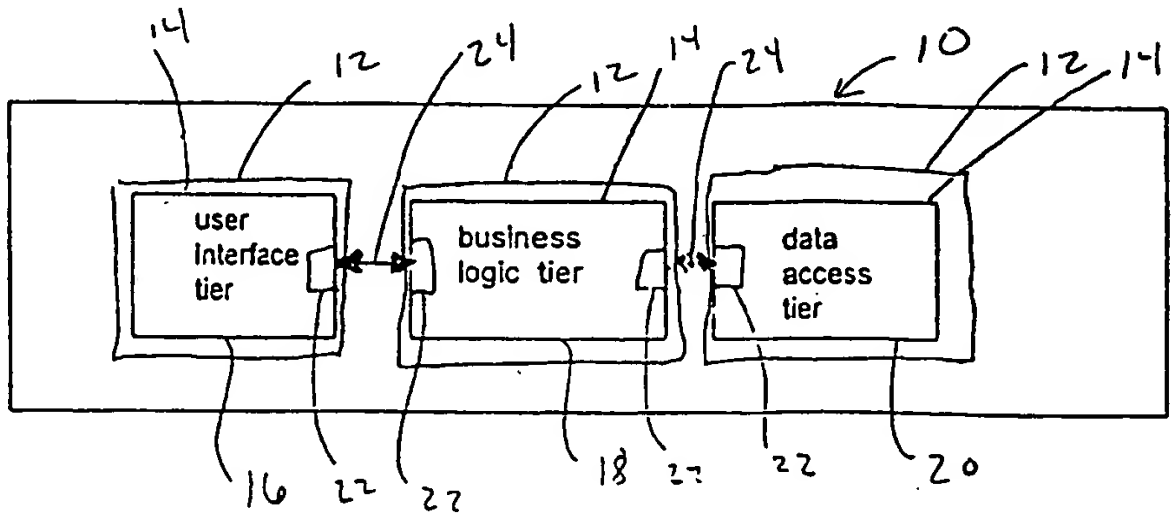

(57) Abstract

An apparatus and method for processing health care transactions through a common interface in a distributed computing environment using specialized remote procedure calls. The distributed computing environment includes a user interface tier for collecting user inputs and presenting transaction outputs, a data access tier for data storage and retrieval of health care transaction information, a transaction logic tier for applying a predetermined set of transaction procedures to user inputs and health care transaction information resulting in transaction output, an electronic network connecting the user interface tier, data access tier and transaction logic tier to each other and a communication interface for exchanging health care transaction information among the tiers. The communication interface includes an interface definition language generating transaction–specific communication codes whereby data is exchanged through a common interface structure regardless of the origin of the data.

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METHOD AND APPARATUS FOR PROCESSING HEALTH CARE TRANSACTIONS THROUGH A COMMON INTERFACE IN A DISTRIBUTED COMPUTING ENVIRONMENT

Field of the Invention

The present invention relates generally to the field of computer-implemented data processing systems. More specifically, the present invention is directed to an apparatus and method for processing health care transactions through a common interface in a distributed computing environment.

Background of the Invention

The use of computer systems to process health care transactions is widespread. This is the problem. Each generator of health care transactions stores information particular to its needs in a database format optimized for its processes in a computer environment developed from its technical skill level, growth and history.

For example, hospitals store a wealth of information on each patient, health care provider and medical intervention occurring within its walls. Hospitals store information such as, for example, in-patient and out-patient records (including patient charts), doctor privileges, nurse care schedules, operating room schedules and equipment inventories. Traditionally, hospitals transmit only as much of this information to health care insurers as needed to be reimbursed for health care costs.

In another example, physician offices also keep electronic records on each patient. Such information may include patient's personal data, patient immunization records, patient health history records and details about each patient visit. Again, health care providers typically transmit only as much of this information to health care insurers as needed to be reimbursed for health care costs.

In another example, dental offices also keep electronic records on each patient. Such information may include patient's personal data,

patient dental cleaning history, records of upcoming appointments, patient health history records and details about each patient visit. Again, dental care providers typically transmit only as much of this information to health care insurers as needed to be reimbursed for dental care costs.

In yet another example, pharmacies keep electronic records concerning patient prescriptions, patient allergies and patient personal data. Again, pharmacies typically transmit only as much of this information to health care insurers as needed to be reimbursed for pharmacy costs.

The information requesting reimbursement for health care provided to a patient typically is transferred to the health care insurer in the form of a claim. The exact format of a claim takes many different electronic forms depending on the entity that generates the claim. A health care provider entity may be, for example, a hospital, physician office, dentist office or pharmacy. In addition, some claims pass through third party claims clearinghouses before being accepted by the health care insurer which may further change their electronic format. Payment obligations may pass to claims clearinghouses, other insurers, or a financial institution.

The data transfer itself may occur through very different transfer protocols and data error detection processes resulting in transforming data into even different formats.

The difficulty of communicating among different types of information stored in different electronic structures in different electronic environments is compounded when that information may be encrypted and/or compressed as well using different encryption and compression schemes.

In addition, the information itself may be stored in different human languages. Claims generating from a hospital in France are written in French in addition to the French data being encoded in a different database format in a different computer environment. For example, the common format for recording a date in the United States is month/day/year but in Europe, the common format is day•month•year.

Though a perhaps minor difference, the erroneous transposition of the month and day in a data format would seriously undermine the integrity of all the records of an entire file.

There is a continued need for a system capable of communicating between a multiplicity of different computer environments.

Summary of the Invention

The present invention is an apparatus and method for processing health care transactions through a common interface in a distributed computing environment. In particular, the present invention provides seamless communication between different computer systems and the data stored within each system through the use of specialized remote procedure calls.

It is a primary objective of the present invention to provide a common interface structure for processing health care transactions, regardless of the data's native format, compression, encryption, native language, country of origin, or operating environment of origin.

It is another objective of this invention to minimize computing time and resources in processing health care transactions.

It is a further objective of this invention to provide flexible system architecture for processing health care transactions in a constantly changing world.

Brief Description of the Drawings

Figure 1A is a block diagram showing the computer processing system of the preferred embodiment of the present invention.

Figure 1b is a block diagram showing the computer processing system of an alternate embodiment of the present invention.

Figure 2 is a block diagram showing different subsystems operating with the computer processing architecture depicted in Figure 1.

Figure 3 is an illustration of example service requests generated in accordance with the present invention.

Figure 4 is a flowchart describing the general method for processing client and server stubs.

Figure 5 is a flowchart describing the general method for processing health care transactions in accordance with the present invention.

Figure 6 is a flowchart depicting the Validation step of Figure 5 in greater detail.

Figure 7 is a user interface screen depicting user entry of data in the provider contracting subsystem.

Figure 8 is a user interface screen depicting entry of a data request in the provider contracting subsystem.

Figure 9 is a user interface screen depicting the on-line response to the data request of Figure 8.

Figure 10 is a block diagram showing the logical relationships among data within the provider contracting subsystem.

Figure 11 is a block diagram of the member enrollment subsystem.

Detailed Description of the Invention

The present invention provides a system for processing health care transactions in response to a user's request in a heterogeneous computing network. This is accomplished with an international manage care administrative system architecture.

The preferred embodiment of the present invention is implemented in a heterogeneous computer network environment that divides applications into parts or tiers that can be run independently on multiple systems that are connected via a network. More specifically, referring now to the drawings, wherein like reference numerals denote like elements throughout the several views, Figures 1A and 1B show

block diagrams of a computer network 10 including several networked systems 12.

The applications 14 operating within systems 12 are developed using a three-tiered architecture. Each network system 12 implements applications 14 including a user interface tier 16, business logic tier 18, data access tier 20 and communication interface 22. The systems 12 are connected through a network connection 24.

Each application tier 16, 18, 20 may be implemented on a separate computer system 24 within the network system 12 such as shown in Figure 1A. The computer system 12 running one application tier may be completely different from the computer system on which another tier is running. In the preferred embodiment, referring to Figure 1A, each application tier 16, 18, 20 is implemented on an independent computer system 12 networked in a client/server environment. In an alternated embodiment, one or more of the application tiers 16, 18, 20 may be running in the same computer system 12 as shown in Figure 1B.

In the context of this disclosure, the systems 12 to which the terms client and server are attached include programs that are running on some machine connected to a network. More specifically, a "server" is a program that advertises services it is capable of providing and a "client" is any program that requests services from one or more servers. In many cases a server is also a client of other servers in the network 10.

In the preferred embodiment, user interface tier 16 is implemented on a personal computer providing a graphical user interface (GUI). More specifically, in the preferred embodiment, the personal computer functions under an operating system consistent with Microsoft Windows operating system standards and is configured, at a minimum, with an Intel '386 processor chip or its equivalent and 8 MB RAM.

Business logic tier 18 is implemented on a server system in the preferred embodiment. It is understood that the server system may be a computer system 12 of any size from personal computer to mainframe to supercomputer depending on the computer resources required. In the preferred embodiment, the business logic server system is implemented

on Unix computer systems, such as, IBM RS/6000 running AIX 3.2.5 and programmed in ANSI C and SQL (Structured Query Language).

Data access tier 20 is implemented in a database system. It is understood that the database system can be maintained in a computer system 12 of any size from personal computer to supercomputer, depending on the nature and volume of the data stored. In the preferred embodiment, the database system is a relational database server utilizing SQL for database access, such as the one vended by Sybase Corporation, in a UNIX operating environment.

The use of the three-tiered architecture accommodates the scalability of applications. Desired functionality extends to operate on a number of computer systems 12 throughout the network. Portability of applications from one system 12 to another is enhanced within the three-tiered architecture of the distributed computer network environment because of the modular structure of the applications. The modular design encapsulates each application 14 and its operation such that much of the application's operation and implementation information is hidden from a user. Each application 14 uses an interface to present its abstractions cleanly with no extraneous implementation information. Thus, applications are scalable to the environment in which they reside as long as a clean interface is maintained.

Communication interface 22 provides the standard mechanism for inter-tier communication. Rigorous definition of the communication interface 22 allows one tier of an application to be replaced without effecting other tiers. The replaced portion of the application is kept current with the latest technologies without requiring rewriting of an entire application each time one part is upgraded. For example, the user interface tier 16 can be independently replaced with a different technology or system 12 without affecting the business logic 18 or data access 20 tiers.

In the preferred embodiment, communication interface 22 is implemented via remote procedure calls (RPCs). The RPCs are implemented through the use of Open Environment Corporation's (OEC) Entera product consistent with Open Software Foundation's Distributed

Computing Environment (DCE). DCE defines a vendor-independent definition of RPC communication in a heterogeneous, distributed network. Use of DCE provides a robust, open systems definition for client/server communications. In the preferred embodiment, the communication interface 22 transfers data among the tiers 16, 18, 20 over standard TCP/IP (Transmission Control Protocol/Internet Protocol) connections. Tiers 16, 18, 20 provide processing for health care transactions.

Referring to Figure 2, health care transactions can originate from many different sources or clients, such as, for example, enrollment subsystems 26, billing subsystems 28, benefits subsystems 30, provider contracting subsystems 32,provider network management 34, claims processing subsystems 36, security and authorization subsystems 38, check processing subsystems 40, customer service subsystems 42, case management subsystems 44, cost containment subsystems 46, provider electronic data interchange (EDI) subsystems 48 and/or browser subsystems 50. It is understood that each subsystem 26-50 may be maintained on completely different computer hardware systems from the other subsystems. Each hardware configuration operates with its own operating system environment storing information in potentially widely varying data formats.

Depending on the health care transaction processed, the client request for the transaction service is sent to an appropriate server for the requested information. Servers include, for example, the business logic tier 18 and data access tier 20 of the enrollment subsystems 26, billing subsystems 28, benefits subsystems 30, provider contracting subsystems 32,provider network management 34, claims processing subsystems 36, security and authorization subsystems 38, check processing subsystems 40, customer service subsystems 42, and case management subsystems 44.

The requests for transaction service are generally implemented as remote procedure calls (RPCs). Remote procedure calls are ideally suited to handling multiplicity of health care transactions. Once modified to handle health care transactions, RPCs provide a method

for communication among systems with very different types of data maintained in very different formats and computing environments while maintaining the integrity and character of that data. Though the client request is generated in one computer system 12 or subsystem 26-50 and the requested information lies within another computer system 12 or subsystem 26-50, the communication interface 22 provides a common interface for completing the transaction service requested by the RPC.

More specifically, referring to Figure 3, as each application within tier 16, 18, 20 is added to network 10, an interface communication file 52 is created for each client program 54 and each remote server procedure 56. The interface communication file 52 generates communications code 58. The generated communications code 58 is referred to as client stubs 60 and server stubs 62. In the preferred embodiment, client stub 60 and server stub 62 are incorporated into applications 54, 56. With OEC Entera product, client stubs 60 are generated in PowerBuilder™, C, or perl, depending on the need. Server stubs 62 are generated in C and perl.

Use of a common communication interface 22 in the system architecture of the present invention enables the use of open systems technologies, adherence to international data processing standards and internationalization standards while utilizing an architecture that promotes vendor independence. This distributed computing model can operate in both a local area network as well as over a wide-area network or over the Internet.

In the preferred embodiment, the RPCs have been modified to generate health care transaction-specific client stubs 60 and server stubs 62. The client and server stubs generators 52 are incorporated into applications during the compilation process. More specifically, the incorporation process occurs automatically through the use of specialized compilation tools.

In particular, the specialized compilation tools have been implemented as a set of makefile templates for use in building servers. The makefile templates primarily contain macro definitions for the UNIX

MAKE facility. These definitions provide information required by MAKE to compile and package a server. Sample makefile templates with common rules to build servers and clients are included in Appendix A.

It is understood that the contents of any macro will change depending on the application developed. For example, typical macros in the makefile templates include macros named SERVER, DB_NAME, APPL_NAME. The SERVER macro defines the name of the server. The DB_NAME macro defines the name of the database to be accessed by an SQL server. The APPL_NAME macro defines the name of the application. The particular macros used and the values assigned to them vary according to the type of server. For example, a server build in an SQL environment with C code uses one makefile template while a server built with embedded SQL requires a different template and a server built using C code uses a different template.

Once a server is built and logged on to the network 10, the server is ready to process requests from a client. The type of requests that the server will process depends on whether the server supports applications 14 for the user interface tier 16, business logic tier 18 or data access tier 20.

In operation, when a client makes a request for a service from a server, communication interface 22 provides the information to the server in the format that it requires to perform the service requested. More specifically, the communication interface 22 connects the client with the appropriate server and passes information between the server and client through client/server stubs 60, 62 generated during the request process. The client/server stubs 60, 62 are generated from interface specifications 52 coded during the compilation process according to the makefile templates. This generated stub code insulates the application developer from the underlying complexities of network programming.

Referring to Figures 3-6, the request process is initiated when a client makes a request for service (step 100 of Figure 4). Typically, the request is initiated as an ordinary function call in the operation of the client application. For example, referring to Figure 3, the client program 54

requests membership information 64. For convenience, the reference numbers of the elements of Figure 3 will be used to aid in the description, however, it is understood that the example depicted in Figure 3 is only an example and that many other types of requests are made within a health care transaction network 10. For example, request 64 for member enrollment information may be made by program 54 in the benefit subsystem 30. The benefit subsystem 30 holds information regarding benefit plans. Benefit plans define what services are covered and at what level each service is covered. Following this example and referring to Figure 3, the benefit subsystem 30 is the client and the enrollment subsystem 26 is the server. Broadly, enrollment subsystem 26 processes benefit subsystem's 30 client request for member enrollment information and returns the information to benefit subsystem 30 appended to server stubs 62.

Referring to Figure 4 for general functionality, client application makes a service request 64 (step 100). Client stub 60 is generated (step 102). Client stub 60 includes information for the remote procedure call, handling of input arguments and understanding of the client/server context.

Next, the client stub 60 locates the appropriate server to handle the request (step 104). If the client does not know the location of the appropriate server, client stub 60 queries a directory server for the list of locations (hostnames and ports) where a server is available. The directory server listens for client requests and maintain a list of locations of servers registered with the directory server. In response to the client stub 60 query, directory server returns the address(es) of available servers in the network 10. The client stub 60 caches the server address(es) for future requests and for redundancy purposes. If the address of the appropriate server is already cached, client stub 60 uses the cached information to locate the server.

After client stub 60 has located a server (step 104), it sends the client input arguments through the network 10 to its corresponding server stub 62 (step 106). The input arguments typically include a security ticket

validating the client. The server then processes the request (step 108). More specifically, server stub 62 unpacks the input arguments and calls the function desired by the client application. For example, in Figure 3, server program function 66 checks on membership status. Server function 66 returns output arguments (and any error parameters) to the server stub 62 which passes them back to the client stub 60 (step 110). Client stub 60 processes response to the request (step 112). More specifically, the client stub 60 unpacks the output arguments and returns them to the client application (step 112).

It is understood that whether the process is defined as a client process or a server process depends on the context and perspective of the client and server. For example, a server can make requests to other servers, making the process both a server and a client process. Generally, client stubs 60 are responsible for locating a server to handle the request, packaging input arguments and passing them over the network 10 to the server with the validation ticket, waiting for the server to reply and unpacking the return value and output arguments returned by the server. Server stubs 62 are responsible for listening for client requests, unpacking the input arguments, validating server access, calling server function, packaging the return value and output arguments returned by the server code, recording audit information, gathering performance data and passing return value and output arguments back to client stub 60 over network 10.

Referring to Figure 5, when a client first makes a request, the network 10 first checks that the client is valid (step 114). Once the client is validated, the client requests can be sent through the network 10 (step 116) for processing by a server (step 118) to receive the appropriate output (step 120).

Referring to Figure 6, the validation step 114 of Figure 5 is depicted in greater detail. Validation step 114 starts by verifying that the client is connected to the network 10 (step 122). Then, network 10 checks that the client has been authenticated (step 124). More specifically, the network 10 checks whether the client has a valid ticket to request network services. The client stub must present a valid network-generated ticket

when making a service request. Those skilled in the art will recognize that the form and contents of a valid ticket may vary depending on the security requirements of network 10.

Once the network 10 authenticates the client, the server checks whether or not the client is authorized to use the interfaces in the server (step 126). More specifically, the server verifies that the specified user is a member of a group that has permissions to perform the requested operation by comparing the ticket contents against the server's own database access control information.

Examples of the specific types of requests made and data flowing through a health care transaction network 10 are shown in Figures 7-11. Figures 7-10 show the provider contracting subsystem 32 which provides data management functions to build and maintain provider contracting definitions. Definitions managed within the provider contracting subsystem 32 include, for example, information about: health care providers, including physicians, hospitals and dentists; reimbursement agreements between providers and a company; effective dates; contracting entity; contracting companies; fee schedules and rates; rate type, such as, per diem, per hour, per stay, percentage; fee maximums; procedure codes; hospital categories; government health care program information, such as, Medicaid and Medicare; and data relating to costs associated with a medical service but for which a claim has not yet been received.

More specifically, for example, for the fee schedule, the data captured is the rate schedules used by the providers. In particular, the information stored includes a unique id for the fee schedule, a free form description of the schedule, the procedures and maximum fee rates for each procedure code covered in a fee schedule, and a resource based relative value scale rate (pre-determined).

The data may be entered in different formats. In the preferred embodiment, the data is entered as shown in Figure 7. For example, demographic parameters for a particular health care procedure code include the type of procedure 130, specific procedure code 132, text

description of procedure code 134, the effective and expiration dates for the use of procedure code 136, any gender limitation for procedure 138, any age limitation for the procedure entered as the limits of an age range 140 and information as to whether additional description is required 142. The specific procedure code is obtained from standard listing of procedure codes updated annually by national medical and insurance associations. Different demographic parameters are required for dental procedures 144.

Requests for procedure code fee schedule information are made as shown in Figure 8. Procedure code information can be obtained by searching for a given procedure type 130, a particular procedure code or range of procedure codes 132 and/or procedure description 134. Procedure code fee information is returned, as shown, for example, in Figure 9. In Figure 9 the information is sorted by contract unit 146 and fee schedule 148. Procedure code data is stored in a database system. It is understood that the database system may be a single database system or different database systems. Figure 10 shows the interconnectiveness of the data, its general storage and access relation to other files. Appendix B provides an example data dictionary listing variable names and descriptions.

In another example, enrollment subsystem 26 establishes and maintains individual membership health care plan enrollment records. Referring to Figure 11, first a contract for managed care services is signed between an account and a managed care organization (step 150). An account may be an individual, family or company. Next, the contract information is entered into the subsystem 26 (step 152). Next, enrollment form information, provided by each individual member, is entered into the subsystem 26 (step 154). Enrollment additions, changes and terms are each entered as a transaction to the enrollment subsystem 26 (step 156). Enrollment information is retrieved from the enrollment subsystem 26 as needed by other subsystems such as, for example, the benefit subsystem 30.

Although the description of the preferred embodiment has been presented, it is contemplated that various changes could be made without deviating from the spirit of the present invention. Accordingly, it is intended that the scope of the present invention be dictated by the

appended claims, rather than by the description of the preferred embodiment.

APPENDIX A A-1

```
# $Id: Makefile,v 1.6 1996/12/11 19:26:16 mbell Exp $
#
# Copyright UNITED HEALTHCARE CORPORATION 1995.
# This software and documentation contain confidential and
# proprietary information owned by United HealthCare Corporation.
# Unauthorized use and distribution are prohibited.
#
# Sample makefile to be used for servers generated via tpmake.
# vi:set tabstop=8:
# Specify the name of the server.  The server binary will be left in a file
# with this name.
PROD_USER=`whoami`

SERVER          = fee_query

# The SQL_PREFIX macro has been left to facilitate use of both 1.0 and
# 1.1 versions of the OEC tools.  It's function has been replaced by
# the SQL macro.

SQL_PREFIX      = fsched_query

# The SQL, DB_NAME, DB_TYPE, DB_LOGIN, and DB_PWD macros are used to build
# the $(SERVER).res file required by tpmake.
#
# SQL - Specifies the name of a file containing SQL statements.  The file
#       name must end with a .sql suffix.  A C source file will be created
#       for each SQL file.  These files will have names that correspond
#       with the SQL file names (e.g., queries.sql results in queries.c
#       being generated).
#
# DB_NAME - Specifies the name of the database to be accessed by the
#       statements in the corresponding SQL file.
#
# DB_TYPE - Specifies the type of DBMS where the database resides.  This
#       must be one of the following:
#             db2     - DB2/6000
#             sybase  - SYBASE
#
# DB_LOGIN - Specifies the name of a shell environment variable that will
#       contain the login id used to access the database.
#
# DB_PWD - Specifies the name of a shell environment variable that will
#       contain the password used to access the database.
#
# NOTE: The 1.1 version of the tools allows a single server to access
# multiple databases.  If your server needs to do this, specify multiple
# values for each of thes macros. For example:
#
# SQL       = syb_queries.sql     db2_queries.sql
# DB_NAME   = claims              calls
# DB_TYPE   = sybase              db2
# DB_LOGIN  = SYB_LOGIN           DB2_LOGIN
# DB_PWD    = SYB_PWD             DB2_PWD
#
# The number of values specified for each of these macros must match.

SQL             = $(SQL_PREFIX).sql
DB_NAME         = 'getenv("DB_NAME")'
DB_TYPE         = sybase
DB_LOGIN        = DB_LOGIN
```

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```
DB_PWD          = DB_PWD

SQL_TAGS        = $(SQL:.sql=)
SQL_C           = $(SQL:.sql=.c)
SQL_DEF         = $(SQL:.sql=.def)

# Specify the test client name.  If there is no test client
# (e.g., rpcdebug is used for testing the server), specify the keyword
# "none".

CLIENT          = none

# Specify names of all IDL files that should be combined to form the
# IDL definitions for this server.  The makefile will merge the specified
# files into the file $(SERVER).def.  Therefore, you must not have hand
# coded IDL definitions in a file named $(SERVER).def.
#
# Some commonly used definitions for IDL_SRCS are:
#
# IDL_SRCS = $(SQL_DEF)
#
#       All IDL definitions are generated from SQL via sqlmake.
#
# IDL_SRCS = my.def
#
#       All the IDL definitions for the server have been hand coded.  No
#       IDL definnitions will be generated from the SQL definitions.
#
# IDL_SRCS = my.def $(SQL_DEF)
#
#       The hand coded IDL will be merged with IDL generated by sqlmake
#       to create the server's IDL definitions.

IDL_SRCS        = fs_query.def

# Specify the version identifier to place in the generated IDL file.
#
# NOTE: This may not be left blank

IDL_VERSION     = 1.0

# The DATABASE macro has been left to facilitate use of both 1.0 and
# 1.1 versions of the OEC tools.  It's function has been replaced by
# the DB_NAME macro.

DATABASE        = newunity


# Specify the name of the application as it appears in the authentication
# maps.  This value is used by the code generated to validate application
# tickets.  If this server does not require application tickets, leave the
# application name blank.

APPL_NAME       = unty

# Specify the type of ticket required.  This must be either global_ticket
# or appl_ticket.

TKT_TYPE        = appl_ticket
```

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```
# Specify the name of a global string variable that will hold the ticket
# that may be required to access functions in the server.  If none of the
# server functions require ticket validation, this can be left blank.
#
# NOTE: PowerBuilder applications will have to manually declare this global
#       variable.

TKT_NAME        = g_sSec_appltkt

# List all server functions that do not require ticket authentication.
# The default is to require a valid ticket for access.  Specify the
# keyword "all" to prevent the addition of ticket handling code.
#
# NOTE: If you will be testing the server via rpcdebug, you must specify
#       NO_TICKET=all when building the test server.  This can be done on
#       the make command line; there is no need to change the makefile
#       to build a test server (e.g., make NO_TICKET=all).

NO_TICKET       =

# If you want to turn error logging on for this server, specify the
# keyword "yes". Otherwise leave it blank, the default here.

ERROR_LOGGING   = yes

ESCAPEQUOTES    = on

# To use message catalogs, place the prefix name of the message source
# file here. The prefix name is the same as the Unity subsystem prefixes.
# i.e. ben, enr ...  The message source file and the message Makefile
# should already be placed in a subdirectory of the same prefix name
# in the path ($WORK_ROOT)/unity/msg .
#
#       (e.g. for the subsystem prefix name "xyz" )
#
#       "$(WORK_ROOT)/unity/msg/xyz/xyz.msg" where the
#       message source file name is   xyz.msg   and
#       MESSAGES = xyz .
#
#       Add the following definition file format in
#       the server's include list:
#       #include  "xyz_msg.h"
#
#       Refer to ($WORK_ROOT)/unity/msg/README for more information.
#
#       Be sure the WORK_ROOT environment setting is set to "$HOME/work".

MESSAGES        = prv

MESSAGES_H      = $(MESSAGES:=_msg.h)

# List any functions that require auditing.  If the keyword "all" is
# specified, every function call will be audited.  By default, functions
# will not be audited.

AUDIT           =

# Specify the name of a function to be called during server initialization.
# If you do not need a function called during server initialization, leave
```

A-4

```
# this blank.
#
# NOTE: Servers generated by tpmake include a function named $(SERVER)_init
#       that must be called to initialize the server.  If you change the
#       SRVR_MAIN definition to call your own initialization function,
#       your function must call $(SERVER)_init.
#
# NOTE: This macro is not used by the 1.0 build process.

SRVR_MAIN       = init_nls_func

# Specify the name of a function to be called during server shutdown.
# If you do not need a function called during server shutdown, leave
# this blank.
#
# NOTE: Servers generated by tpmake include a function named $(SERVER)_end
#       that must be called to cleanup the server.  If you change the
#       SRVR_CLEANUP definition to call your own clenaup function, your
#       function must call $(SERVER)_end.
#
# NOTE: This macro is not used by the 1.0 build process.

SRVR_CLEANUP    = $(SERVER)_end

# Specify types of server and client stubs to be generated.
# currently build C server stubs, C client stubs, PowerBuilder client stubs,
# and Perl client stubs.

SRVR_STUB       = $(SERVER)_s.c
CLNT_STUBS      = $(SERVER)_c.c \
                  $(SERVER)_c.pl

# Specify the source files that make up the server.
#
# NOTE: Do not remove the reference to transac.c; it is required for
#       code generated by tpmake.

SRVR_SRCS       =  \
                  fs_query.c \
                  $(SRVR_STUB) \
                  $(SQL_C) \
                  transac.c \
                  fs_query_nls.c

# Specify the components that make up the client (if there is one).

CLNT_SRCS       = $(CLIENT).c \
                  $(SERVER)_c.c

# Specify any man pages to be installed with this server.

MANPAGES        = $(SERVER).1

# Specify the top of the installation directory.  The install target is
# set up to install files relative to this directory.  The default is
# correct for most servers.

WHEREIGO        = $(DESTROOT)/usr/dce
MANDIR          = $(DESTROOT)/usr/man/man1
```

A-5

```
# Define the list of object files needed for the server and client.
# The default is correct for all servers.

SRVR_OBJS       = $(SRVR_SRCS:.c=.o)
CLNT_OBJS       = $(CLNT_SRCS:.c=.o)

# Define options used on cc commands.  The default is correct for most
# servers.
#
# NOTE: To compile the program with debug tables, specify "MAXOPT=-g" on the
#       make command.  The ECFLAGS macro allows you to specify other options
#       and to override default options when necessary.

MAXOPT          = -O
DEFINES         = $(DCE_DEFINES)
INCLUDE         = $(DCE_INCLUDES) -I$(IIS_DCE_TOOLS)/include
LIBDIRS         = $(DCE_LIB_DIRS) -L$(IIS_DCE_TOOLS)/lib  $(LOCAL_LIB_OPTION)
CFLAGS          = $(MAXOPT) $(DEFINES) $(INCLUDE) $(LIBDIRS) $(ECFLAGS)

# List of libraries to be searched when loading the server or client.
#
# NOTE: You must not remove either of the default values.

LIBS            = $(SYBASE_LIB) $(DCE_LIBS) $(UNTY_LIBS) $(LOCAL_LIB_NAME)

# Rules for required targets.

all: $(MESSAGES_H) stubs client server

install: all
        $(INSTALL_SERVER) $(SERVER) $(IDL_VERSION) $(WHEREIGO)
        touch $(SERVER).1
        $(INSTALL_MAN_PAGES) $(MANDIR) $(MANPAGES)

clean:
        rm -rf  $(SQL_C) $(SQL_PREFIX).h $(SERVER)_funcs.h transac.c
        rm -rf $(SRVR_OBJS) $(CLNT_OBJS)
        rm -rf $(SRVR_STUB) dbms.h warning
        rm -rf $(SERVER).res $(SERVER).def $(SQL_PREFIX).def
        rm -rf *.time

clobber: clean
        rm -rf $(SERVER) $(CLIENT) $(CLNT_STUBS) $(SERVER).h

server: $(SERVER)

these:
        echo $(MESSAGES_H)

client: $(CLIENT)_check

stubs: $(SRVR_STUB) $(CLNT_STUBS)

LOCAL_LIB_OPTION        =       -L$(LOCAL_LIB_DIR)
LOCAL_LIB_NAME  =       -lprvlib
LOCAL_LIB               =       libprvlib.a
LOCAL_LIB_DIR   =       $(WORK_ROOT)/unity/prv/lib

# Pick up the common macro definitions and make rules
```

A-6

```
include $(UHC_DCE_TOOLS)/include/dcel_[illegible]
include $(UHC_DCE_TOOLS)/include/dcel_current_stubs
include $(UHC_DCE_TOOLS)/include/dcel_make_rules
include $(UHC_DCE_TOOLS)/include/dcel_sql_make_rules

# Place any server specific dependency rules and/or targets after this comment.

# The following includes are unity specific.

include $(WORK_ROOT)/unity/include/unty_make_rules
include $(WORK_ROOT)/unity/include/unty_common_defs

# These includes are for makeing "generic" servers.
# Uncomment and customize as required.

# SUBSYS                        = your_subsystem_name
# SQL_LOG_FILE          = text_file_name_which_includes_those_tables_to_be_logge
d
# SUBSYS_LOG_DTM        = the_name_of_the_resulting_dtm_file_for_the_logged_tabl
es

# include $(WORK_ROOT)/unity/include/unty_ctm_rules
```

APPENDIX B B-1

Data Dictionary APPENDIX TO FIGURE 10

Table Name	Description
cont_prop	Properties for contracts - i.e. admin. hold.
cont_unit	Contract Unit Setup Table. This tables defines the valid contract units.
contract	Contracts header information for physician, hospital and dental contracts.
fee_sched	Fee schedule header information for physician, hospital and regional fee schedules.
fees	Physician fee schedules' rates (fee max) by procedure codes.
fs_by_postal	Criteria to define the fee schedule associated to regions (by postal code).
fs_rbrvs	Resource Based Relative Value Master. Contains RBRVS values associated to procedure codes and fee schedules.
fs_rvu	Relative Value Master. Contains RVU values associated to procedure codes.
h_bed_type	Global table listing bed types and descriptions.
h_cat_detail	Hospital Category Detail. Contains the detail which defines a hospital service code category for a contract unit. Used to determine claims payment rates (Hospital contracting).
h_cat_header	Hospital Category Header. Contains the hospital service code categories setup for a contract unit, used to determine claims payment rates.
h_cont_bed	Continuation of the Hospital Contract - lists the bed types and estimates for the bed type for IBNR reporting purposes.
h_cont_list	Continuation of the Hospital contract. Contains the "list" of service categories and the order to use them (priority). Service Categories for hospital contracts are used to determine claims payment rates and rules.
h_per_diem	Continuation of the Hospital contract. Contains the per day/per stay/per hour schedule information for hospital contracts (used when h_cont_list.rate_nbr = 1).
h_per_flat	Continuation of the Hospital contract. Contains the fee schedule information for hospital contracts (used when h_cont_list.rate_nbr = 3).
h_per_fs	Continuation of the Hospital contract. Contains the fee schedule information for hospital contracts (used when h_cont_list.rate_nbr = 2).
hfs_fees	Hospital Fee Schedule Fees. Contains the fee max for a grouping of procedure codes. Used in conjunction with h_per_fs and hfs_grouping.
hfs_grouping	Hospital Fee Schedule Groupings. Contains the range of procedure codes assigned to groupings. Used in conjunction with h_per_fs and hfs_fees tables.
p_cont_list	Continuation of Physician and Dental contracts. Contains the "list" of fee schedules to use and the order to use them (priority).
proc_code	Procedure Code Master File. Contains procedure code description and limitations (gender and age).
proc_type	Global table listing procedure code types and descriptions.
prv_control	Global table listing the "controls" used for processing rules. Currently the only control is which property code denotes Administrative Hold for a contract.
prv_prop_list	Global table listing the valid property codes and descriptions for provider contracting.

B2

Column Name	*Attributes*	*Description*
continue_flag	smallint	Indicates whether or not to continue looking for other categories to match. '0' indicates once the system makes a match, it should not continue to look for another category. '1' indicates the system should continue to check to see if the claim matches any of the other categories. This allows the system to make more than one rate payment on the same claim. Valid values are: 0 - N - no 1 - Y - yes default is 0
contract_name	char (40)	A descriptive name of the contract.
contract_nbr	int	The unique identifier for a contract. A contract consists of several parameters required for claims payment. The values of the parameters when combined make the contract unique.
contract_type	smallint	Indicates the type of contract, valid values are: 0 - D - Dental 1 - H - Hospital 2 - P - Physician (non-hospital and non-dental)
contract_unit_id	char (3)	A unique id for a contract unit. A contract unit is the entity that defines/contracts fee arrangements with a provider network. A contract unit can be a business unit or it can be another entity such as HCFA, an individual state, a national entity, etc.
contract_unit_name	char (40)	The name of the contract unit.
country_code	char (3)	A short code to uniquely identify each country.
db_oper	char (1)	Code for the type of database operation, used internally for audit purposes.
desc_reqd_flag	smallint	Indicates if a more descriptive procedure description is required at claims entry if the procedure code is a generic procedure code. Validated against the code_list.list_id = "yesno" as follows: 0 - N - no - no description is required 1 - Y - yes - yes a more descriptive description is required at claims entry default is 0
eff_date	datetime	The first day the timeline for an entity is active. A timeline represents data for a specific date range.
exp_date	datetime	The last day the timeline for an entity is active. A timeline represents data for a specific date range.
ext_name	char (40)	Description of categories/services external to the Business Unit/Contract Unit.
factor	float	A multiplier used in the contracting subsystem to calculate the fee max when using RBRVS.
fee_max	float	The maximum amount a provider may be paid for a specific health care service provided to covered person under a specific contract.
flat_rate	float	The rate amount for flat rate contracts. Note all procedures will be charged this one amount (if used).
flat_rate_type	smallint	Indicates if the flat rate is a per day rate or a rate by procedure. Valid values are: 1 - P - Procedure default is 1
from_code	char (20)	The lowest value of the data element for a range in the criteria definition.

C-3

Column Name	*Attributes*	*Description*
age_gtr_limit	smallint	Used for age limitation, age greater than the value entered indicates not covered procedure code.
age_less_limit	smallint	Used for age limitation, age less than value entered indicates not covered procedure code.
approve_date	datetime allow null	The date the contract was approved by a supervisor and ready to be used for claims processing.
approve_timestamp	datetime allow null	Date and time the approval was entered.
approve_user_id	char (15)	user_id of the supervisor who approved the contract.
aut_required	smallint	Indicates if an authorization is required for the category. Valid values are: 0 - N - no 1 - Y - yes default is 0
bed_est_charge	float	The estimated charge per day for the bed type. Used for IBNR reporting.
bed_est_type	smallint	The type of estimate charge, valid values are: 0 - D - per diem 1 - H - per hour 2 - S - per stay default is 0
bed_type	char (10)	Unique identifier for a hospital bed type.
bed_type_desc	char (40)	Description for the hospital bed type.
calc_nbr	smallint	Unique identifier to indicate the formula to use when calculating the claim payable amount. Values are validated against code_list table.
cat_code	smallint	A unique key to represent a category of services. Hospital services are grouped into a category within the Unity Provider Contracting subsystem. Examples of hospital categories are: burn unit, mental health/chemical dependency, maternity, etc.
code_type	char (5)	Indicates the type of code range used for a hospital category criteria. Example, R indicates the from_code and thru_code range is a revenue code range, A= indicates the from_code and thru_code range is an age range where the criteria matches if the patient's age is within the age range, etc.. Abbreviations are stored in database. Valid codes are: 0 - HOS - Hospital Codes 1 - PS - Patient Status 2 - PA - Pre-authorization Admit Types 4 - C - Procedure Codes 10 - ID - Diagnosis Code 11 - D1 - Primary Diagnosis Code 12 - D2 - Primary or Secondary Diagnosis Code 13 - A= - Patient Age equal to 14 - A> - Patient Age greater than 15 - A< - Patient Age less than 16 - AC - Claimed Amount exceeds 18 - ZZ - Default (A default category is always setup on a hospital contract as the last priority to establish a default rate for the contract).

C-4

Column Name	*Attributes*	*Description*
percent_of_claimed	float	The percent of claimed amount. Used to calculated contract amount (amount_claimed * percent_of_claimed / 100 = contract amount) or lesser of percent of amount claimed or fee max.
percent_1	float	The percentage amount to pay for the highest dollar procedure (or grouping).
percent_2	float	The percentage amount to pay for the second highest dollar procedure (or grouping).
percent_3	float	The percentage amount for the third highest dollar procedure (or grouping).
postal_from	char (10)	The lowest value of a postal code range.
postal_thru	char (10)	The highest value of a postal code range.
priority	smallint	The priority given to an entity in a table. The priority establishes the search sequence.
proc_code	char (10)	An identifier for medical service (procedure). Procedure codes can be CPT codes (Physician's Current Procedural Terminology codes), CDT codes (Current Dental Terminology codes), procedure codes unique to a country, etc. The combination of procedure code type and procedure code identifies a unique procedure.
proc_code_desc	char (60)	Free form text description for the procedure code.
proc_code_from	char (10)	The lowest value of a procedure code range.
proc_code_thru	char (10)	The highest value of a procedure code range.
proc_code_type	char (1)	The type of procedure code. A procedure code type can be a CPT (Physician's Current Procedural Terminology) type, CDT (Current Dental Terminology) type, ICD-9 (International Classification of Diseases, 9th edition) procedure type, etc. The combination of procedure code type (proc_code_type) and procedure code (proc_code) identifies a unique procedure.
proc_type_desc	char (30)	Free form text description for the procedure code type.
prop_code	smallint	A unique code assigned to a property. Properties establish information that pertains to an entity, but does not apply to all entities. (i.e., administrative hold, alternate Ids, etc.).
prop_value	char (30)	The value of the property. This value could contain why an entity is on administrative hold, the entity's alternate Id, etc.
rate_days	smallint	Indicates the day the rate of payment begins.
rate_nbr	smallint	Indicates whether the rates are based on per diem/per stay/per hour or based on a fee schedule. Valid values are: 1 - D - Per Diem (rates based on per diem/per stay/per hour schedule) 2 - FS - Per Fee Schedule (rates based on a fee schedule) 3 - FA - Flat Amount (rates based on a flat rate)
rate_type	smallint	Indicates the type of rate for the category. Valid values are: 0 - D - per diem (valid for rate_nbr 1) 1 - H - per hour (valid for rate_nbr 1) 2 - S - per stay (valid for rate_nbr 1) 3 - P - percentage (valid for rate_nbr 1 and 3) 4 - A - flat amount (valid for rate_nbr 3)
rbrvs_flag	smallint	Indicates if the fee max value was derived/calculated using RBRVS (Resource Based Relative Value Scale). Values are validated against code_list.list_id = "manualsystem".

B-5

Column Name	*Attributes*	*Description*
fs_desc	char (40)	A descriptive name for the fee schedule (i.e. Medicare, Medicaid Region A, Medicaid Region B, etc.).
fs_id	char (5)	A unique id for a fee schedule. A fee schedule is a listing of codes and related services with pre-established payment amounts.
fs_lookup_rule	smallint	Used to identify how to retrieve (or lookup) fee schedule information. 1 - P - Physician Fee Schedule 2 - R - Regional Fee Schedule (also known as National Fee Schedule) 3 - H - Hospital Fee Schedule
fs_percent	float	Used to adjust a fee max amount for overhead costs and geographical differences.
fs_percentile	smallint	The percentile for the region (i.e. 95th percentile of the Boston region).
gender_limit	smallint	Used for gender limitation, values are validated against the code_list.list_id = "genderlimit" as follows: 0 - M - male - indicates the procedure covered for males only 1 - F - female - indicates the procedure covered for females only 2 - N - indicates the procedure covered for both male and females - no limitation default is 2
grouping	smallint	This number is used to group together rows of criteria (hospital category criteria). When setting up criteria, rows with the same grouping value use "or" logic and rows with different grouping values use "and" logic. For example, Revenue code 100 or Revenue code 110 and CPT code 10040 would be set up as follows: 1 R 100 100 1 R 110 110 2 C 10040 10040.
in_out_flag	smallint	Identifies whether the category applies to Inpatient claims (I), Outpatient claims (O), or both (B) types of claims for the category. Valid values are: 0 - I - Inpatient 1 - O - Outpatient 2 - B - Both default is 0
int_name	char (40)	Description of services/categories internal to the Business Unit/Contract Unit.
payment_type	smallint	Defines how the payment is to be made, valid values are: 0 - F - fee-for-service 1 - C - capitated primary care providers 2 - P - capitated specialists Note: only 0 will be valid for phase I.
pcr_calc_nbr	smallint	Unique identifier to indicate the formula to use when calculating the pcr amount. Values are validated against code_list table.
pcr_type	smallint	Indicates if the Physician Contingency Reserve (pcr , also known as withhold, refer to The Managed Care Resource - A Glossary of Terms for the definition of PCR) is a percent or flat rate. Valid values are: 0 - F - flat rate 1 - P - percent default is 0
pcr_value	float	Physician Contingency Reserve (PCR) rate. pcr_type indicates if value is a percent or a flat rate.
per_day_limit	smallint	Used for limiting the number of units of a procedure covered per day.

Column Name	*Attributes*	*Description*
retro_flag	smallint	Indicates if the rate should be applied to previous days also, or just applied to current and future days. Valid values are: 0 - N - apply to current and future days. 1 - Y - apply to previous days, current day, future days. default is 0
review_date	datetime	The date the fee amount was last reviewed and/or changed.
review_nbr	smallint	The review number to apply to claims. This feature is optional and should be used with discretion. It implies manual intervention for processing of claims.
rvu	float	Relative Value Unit. Introduced by HCFA to reimburse physicians' fees based on the amount of time and resources expended in treating patients (without adjustments for overhead costs and geographical differences). RVUs are setup at the procedure code level (not the fee schedule level).
surface_flag	smallint	Indicates the number of surfaces the procedure can apply to. Used for dental procedure codes (proc_code_type = "D"). Valid values are: 0 - invalid/not required 1 2 3 4 5
thru_code	char (20)	The highest value of the data element of a range for the criteria definition.
tooth_adult_from	char (2)	The lowest value of an adult tooth number range. Used for dental procedure codes (proc_code_type = "D") to determine if the procedure can apply to a specific tooth.
tooth_adult_thru	char (2)	The highest value of an adult tooth number range. Used for dental procedure codes (proc_code_type = "D") to determine if the procedure can apply to a specific tooth.
tooth_child_from	char (1)	The lowest value of a child tooth number range. Used for dental procedure codes (proc_code_type = "D") to determine if the procedure can apply to a specific tooth.
tooth_child_thru	char (1)	The highest value of a child tooth number range. Used for dental procedure codes (proc_code_type = "D") to determine if the procedure can apply to a specific tooth.
tooth_nbr_flag	smallint	Indicates if a tooth number is required when submitting a claim with the procedure code. Used for dental procedure codes (proc_code_type = "D"). Valid values are: 0 - N - No 1 - Y - Yes
tooth_range_flag	smallint	Indicates if a tooth range is allowed when submitting a claim with the procedure code. Used for dental procedure codes (proc_code_type = "D"). Valid values are: 0 - N - No 1 - Y - Yes
user_id	char (15)	A unique Id for each person or process that inserted or modified data in the database table.
user_timestamp	datetime	The date and time an update or insert occurred in the database table.

We claim:

1. A system including a computer system and a user program for processing health care transactions in response to a user request in a heterogeneous, distributed computing network, comprising:

(a) a user interface tier for collecting user inputs and presenting transaction outputs;

(b) a data access tier for data storage and retrieval, said data access tier including one or more databases of health care transaction information;

(c) a transaction logic tier for applying a predetermined set of transaction procedures to said user inputs and said database of health care transaction information resulting in transaction output;

(d) an electronic network connecting said user interface tier to said data access tier and to said transaction logic tier, said data access tier to said user interface tier and to said transaction logic tier and said transaction logic tier to said user interface tier and to said data access tier; and

(e) a communication interface for exchanging health care transaction information among said user interface tier, said data access tier and said transaction logic tier along said network, said communication interface including an interface definition language generating transaction-specific communication codes whereby data is exchanged through a common interface structure regardless of the origin of the data.

2. The system of claim 1 wherein the user program of said user interface tier operates in a graphical user interface environment.

3. The system of claim 2 wherein the graphical user interface environment is consistent with the standards of Windows® operating system.

4. The system of claim 1 wherein said databases of said data access tier are relational databases.

5. The system of claim 4 wherein the relational databases are organized and accessed using Sybase SQL Server database development tools.

6. The system of claim 1 wherein said transaction procedures of said transaction logic tier are developed using ANSI C and SQL programming languages.

7. The system of claim 1 further including one or more functional subsystems connected to the electronic network, each subsystem including said user interface tier, said data access tier, said transaction logic tier and said communication interface.

8. A method for processing health care transactions in response to a user request in a heterogeneous, distributed computing network, said network including a user interface tier having a computer system and user program, a data access tier including one or more databases of health care transaction information, a transaction logic tier including a predetermined set of transaction procedures, comprising the computer-implemented steps of:

(a) initiating a transaction in response to user request;

(b) generating transaction-specific communication codes according to a predetermined common interface structure;

(c) appending the communication codes to the transaction information; and

(d) transferring health care transaction information among said user interface tier, said data access tier and said transaction logic tier to generate transaction output.

9. The method of claim 8 wherein step (b) is implemented by using Open Environment corporation's Entera programming model for creating remote procedure calls.

10. The method of claim 8 step (d) further including the computer-implemented steps of:

(d1) processing said health care transaction information in said transaction logic tier to generate transaction output;

(d2) generating transaction-specific server communication code in response to transaction output created;

(d3) appending server communication code to transaction output.

11. The method of claim 8 further including the computer-implemented step of:

(e) providing transaction output to user.

12. The method of claim 11 wherein step (e) is implemented by displaying the transaction output to said user via a computer monitor.

13. The method of claim 11 wherein step (e) is implemented by presenting the transaction output to said user via a printer.

14. The method of claim 11 wherein step (e) is implemented by presenting the transaction output to said user via electronic mail.

15. The method of claim 11 wherein step (e) is implemented by presenting the transaction output to said user via facsimile machine.

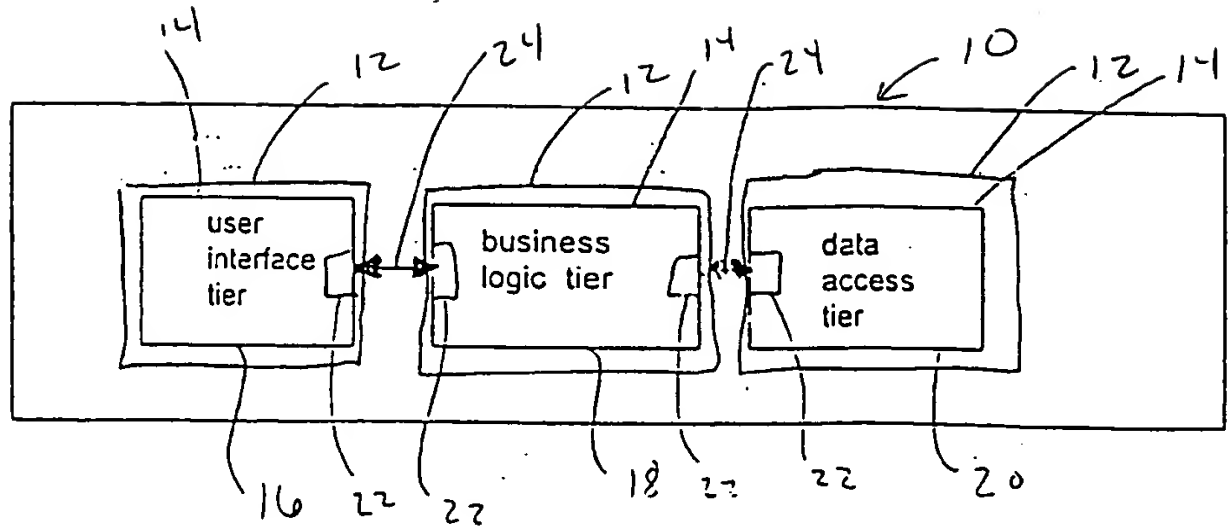
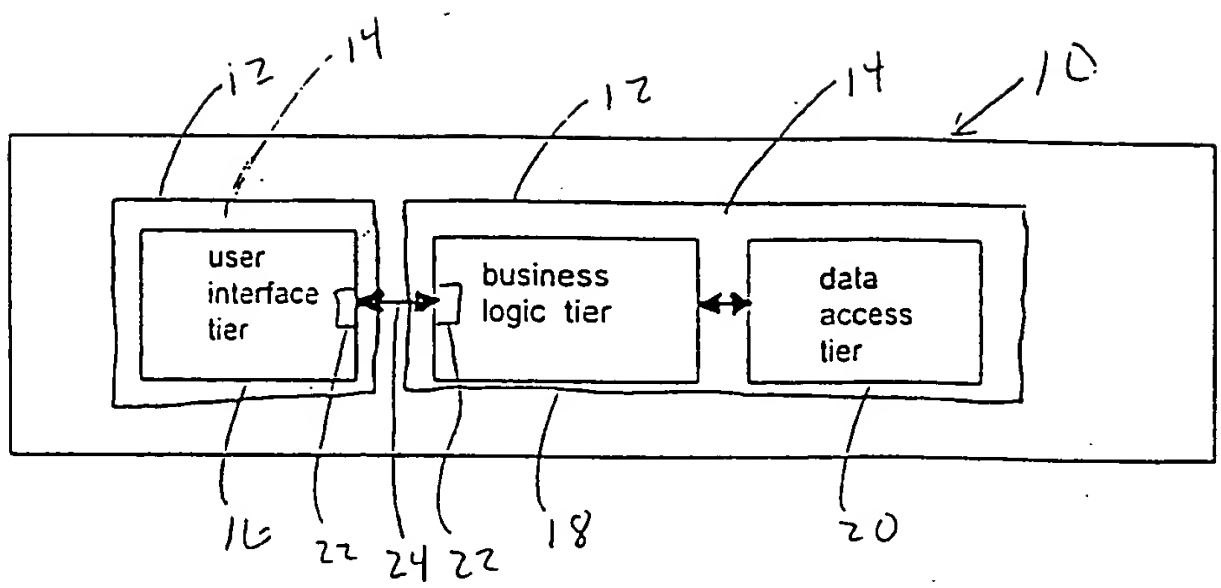

14
12
24
12
14
24
10
12
14
user interface tier
business logic tier
data access tier
16
22
22
18
22
22
20

Fig. 1A


12
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user interface tier
business logic tier
data access tier
16
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24
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18
20

Fig. 1B

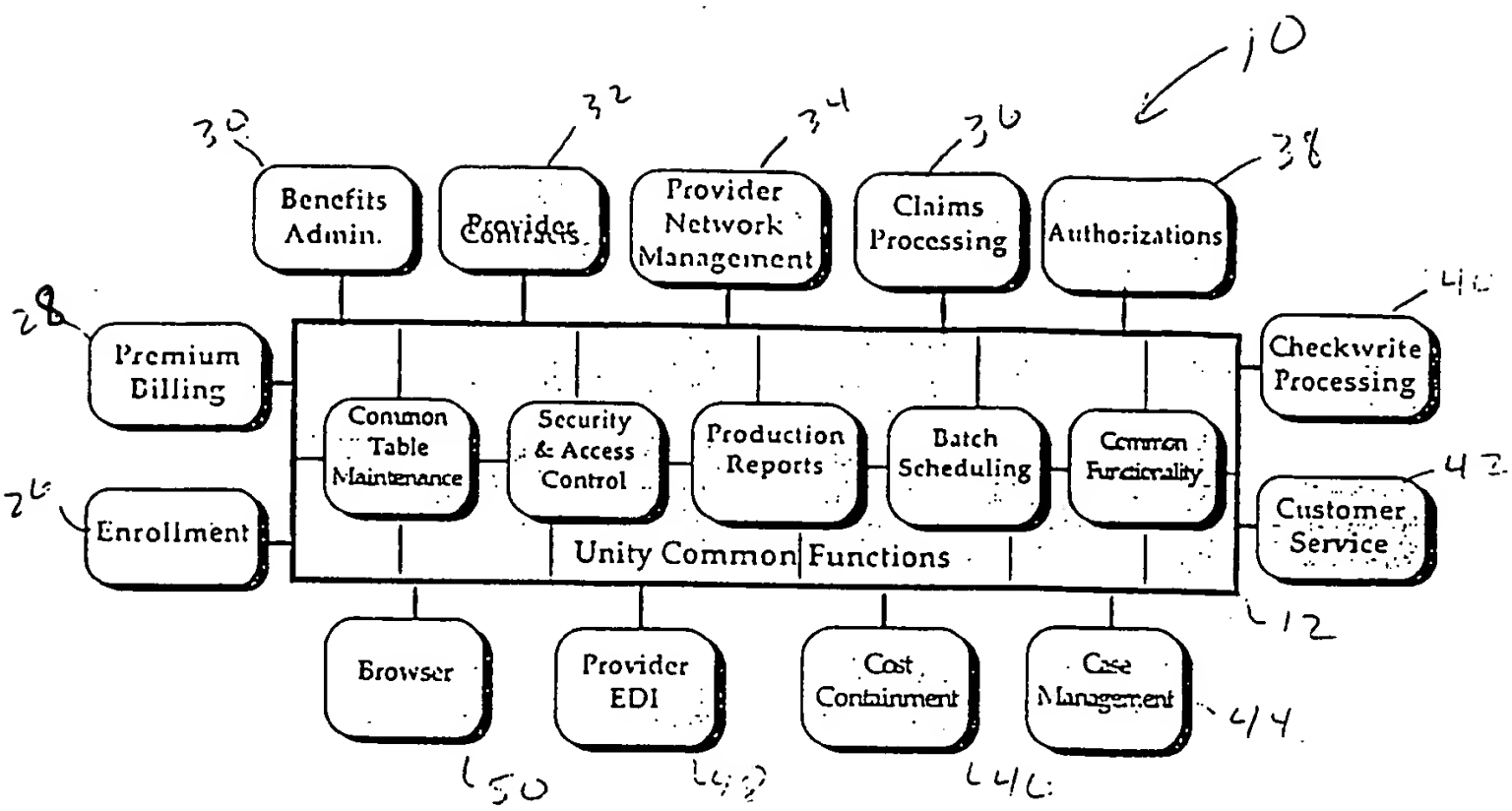

10
30
32
34
36
38
Benefits Admin.
Provider Contracts
Provider Network Management
Claims Processing
Authorizations
28
Premium Billing
40
Checkwrite Processing
Common Table Maintenance
Security & Access Control
Production Reports
Batch Scheduling
Common Functionality
26
Enrollment
42
Customer Service
Unity Common Functions
12
Browser
Provider EDI
Cost Containment
Case Management
14
50
46
44

Fig. 2

Fig. 3

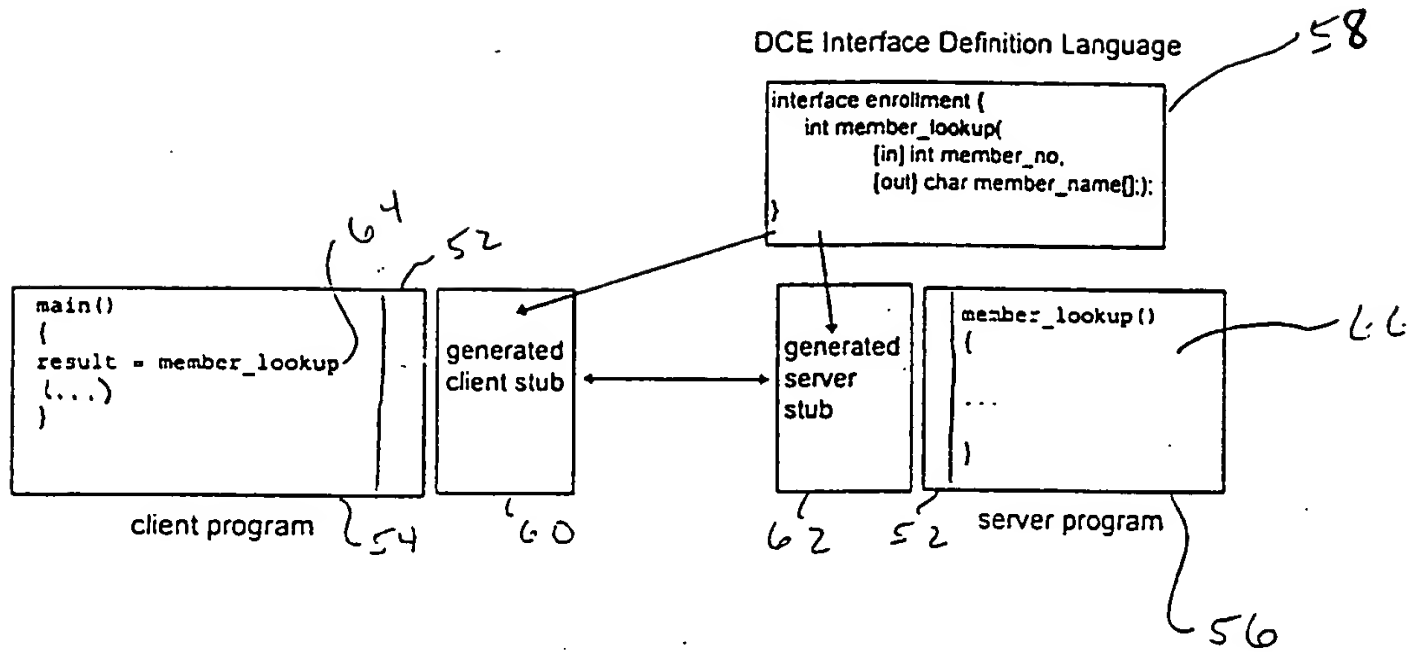

DCE Interface Definition Language
58
interface enrollment {
int member_lookup(
[in] int member_no,
[out] char member_name[]:);
}
64
52
main()
{
result = member_lookup
(...)
}
generated
client stub
generated
server
stub
member_lookup()
{
...
}
66
client program
54
60
62
52
server program
56

Fig. 4

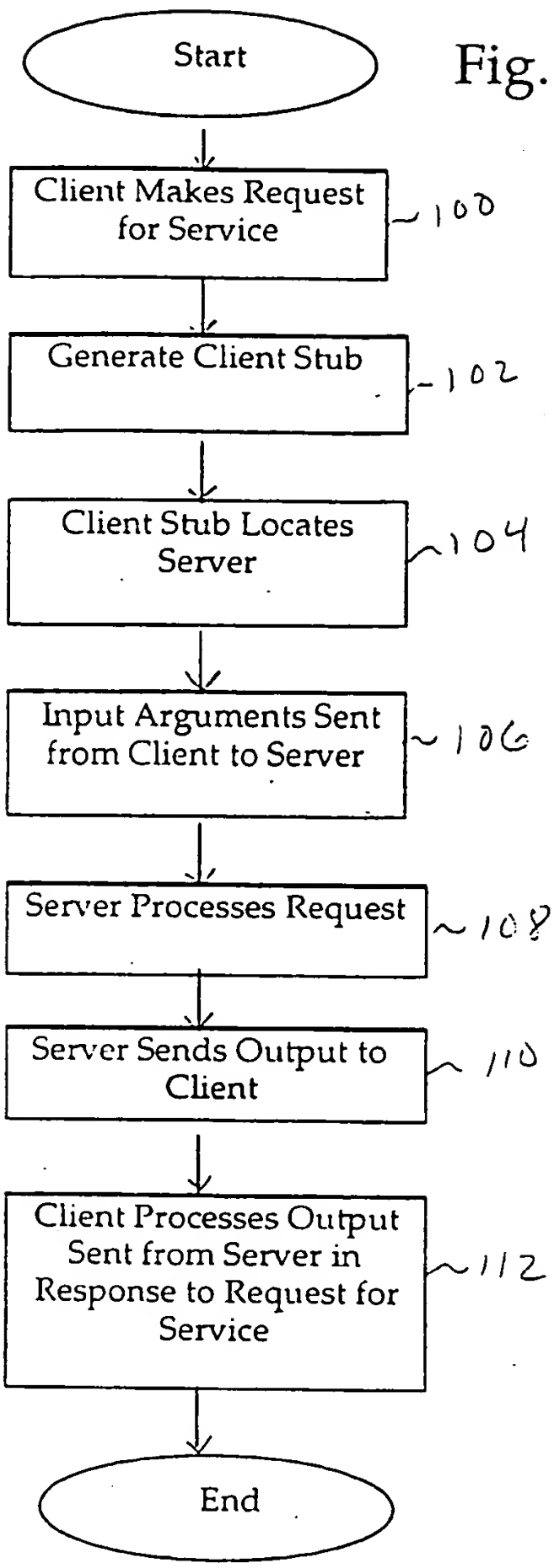

Start
Client Makes Request for Service
100
Generate Client Stub
102
Client Stub Locates Server
104
Input Arguments Sent from Client to Server
106
Server Processes Request
108
Server Sends Output to Client
110
Client Processes Output Sent from Server in Response to Request for Service
112
End

Fig. 5

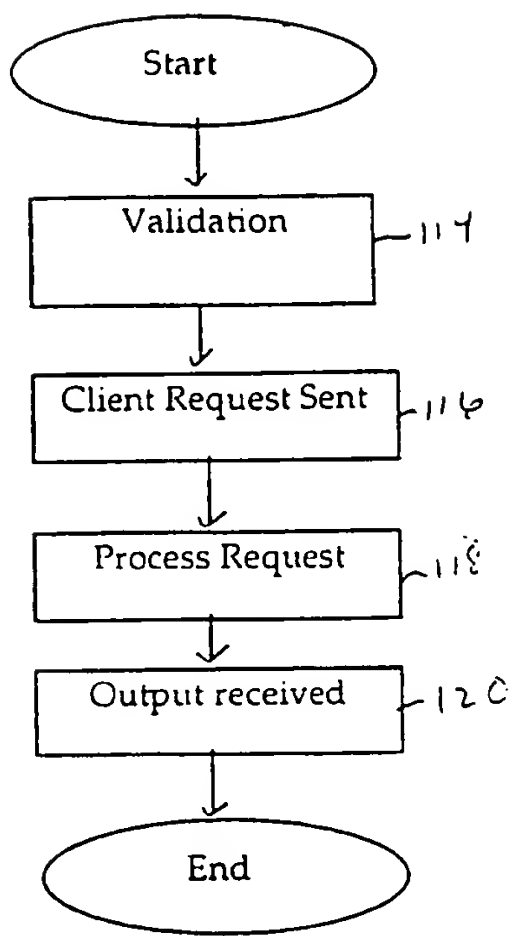

Start
Validation
114
Client Request Sent
116
Process Request
118
Output received
120
End

Fig. 6

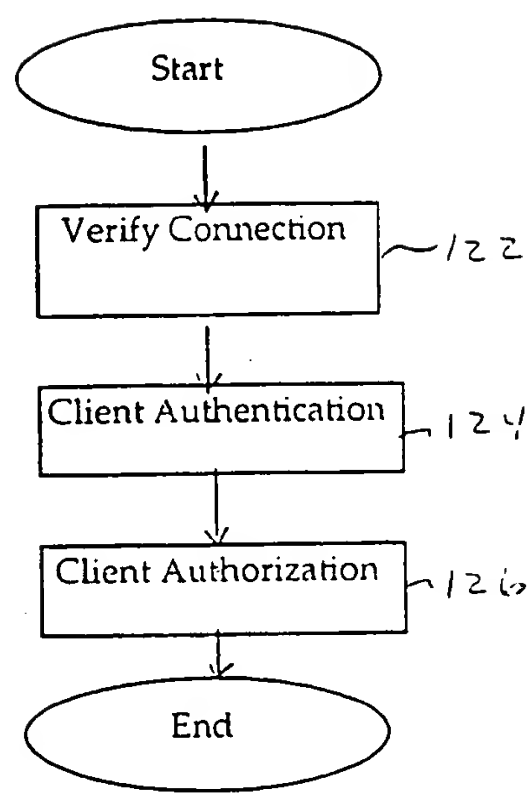

Start
Verify Connection
122
Client Authentication
124
Client Authorization
126
End

Fig. 7

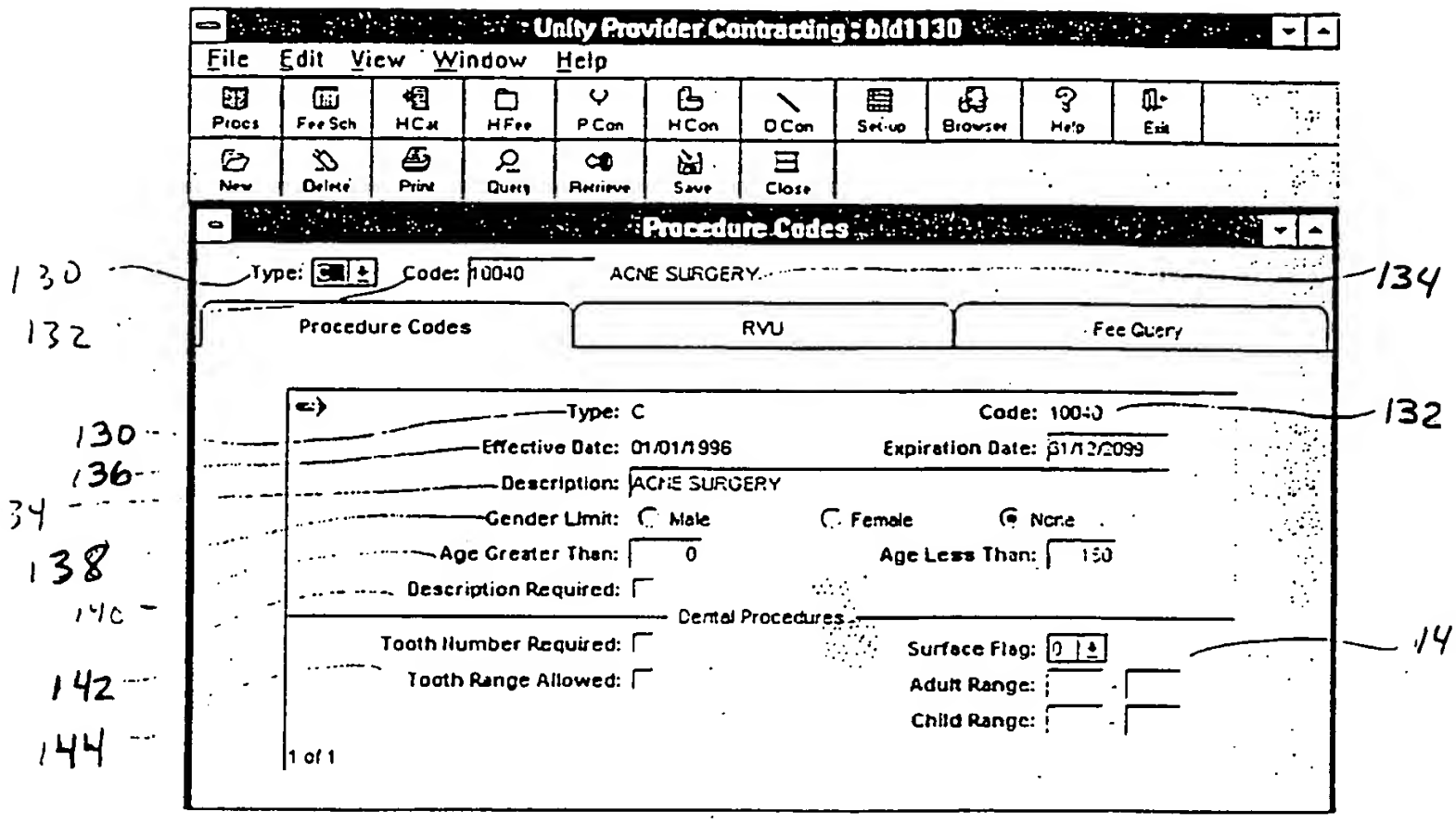

Unity Provider Contracting : bld1130
File Edit View Window Help
Procs
Fee Sch
HCat
HFee
PCon
HCon
DCon
Set-up
Browser
Help
Exit
New
Delete
Print
Query
Retrieve
Save
Close
Procedure Codes
Type: C
Code: 10040
ACNE SURGERY
Procedure Codes
RVU
Fee Query
Type: C
Code: 10040
Effective Date: 01/01/1996
Expiration Date: 01/12/2099
Description: ACNE SURGERY
Gender Limit: Male Female None
Age Greater Than: 0
Age Less Than: 150
Description Required:
Dental Procedures
Tooth Number Required:
Tooth Range Allowed:
Surface Flag: 0
Adult Range:
Child Range:
1 of 1
130
132
134
136
138
140
142
144

Fig. 8

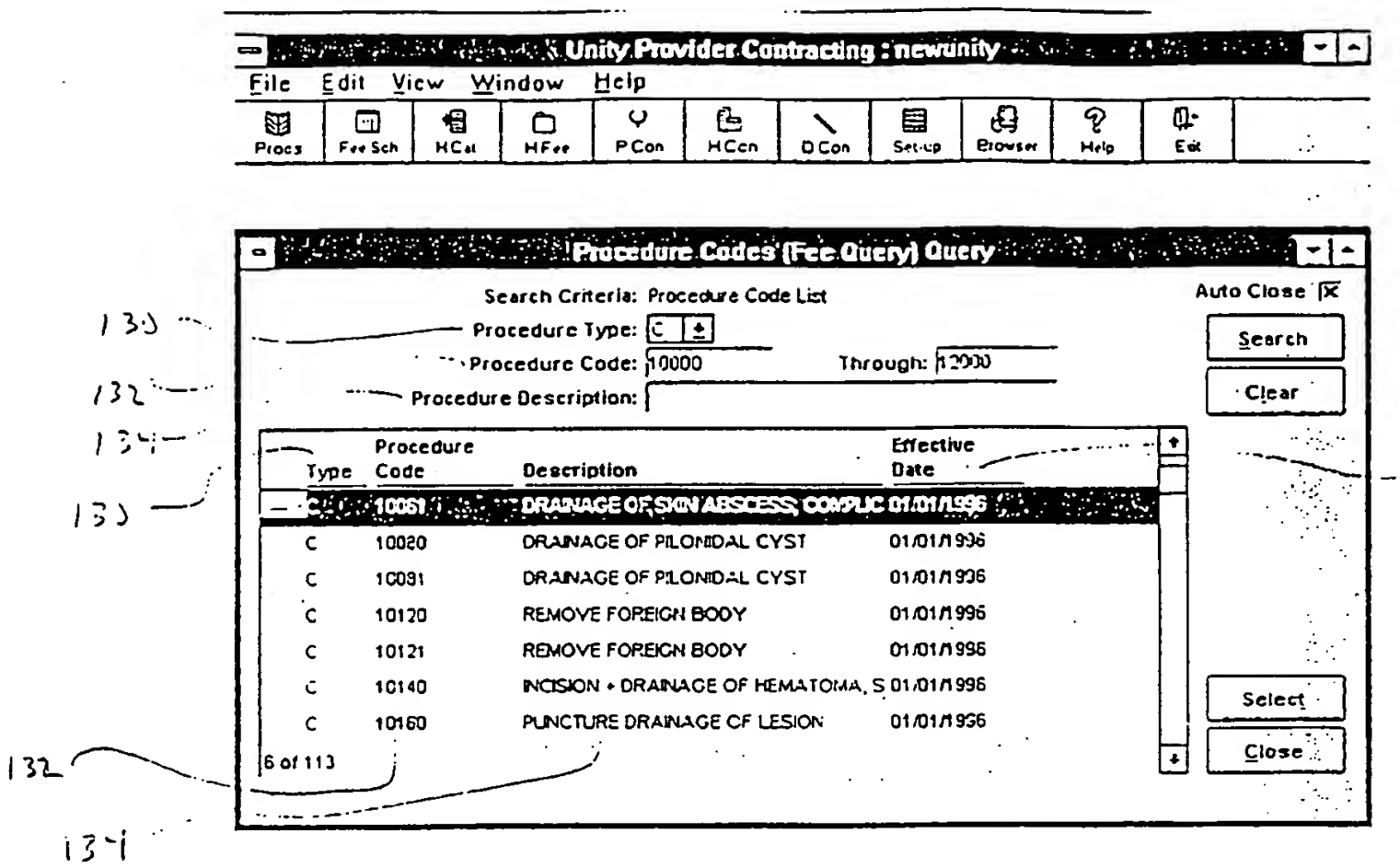
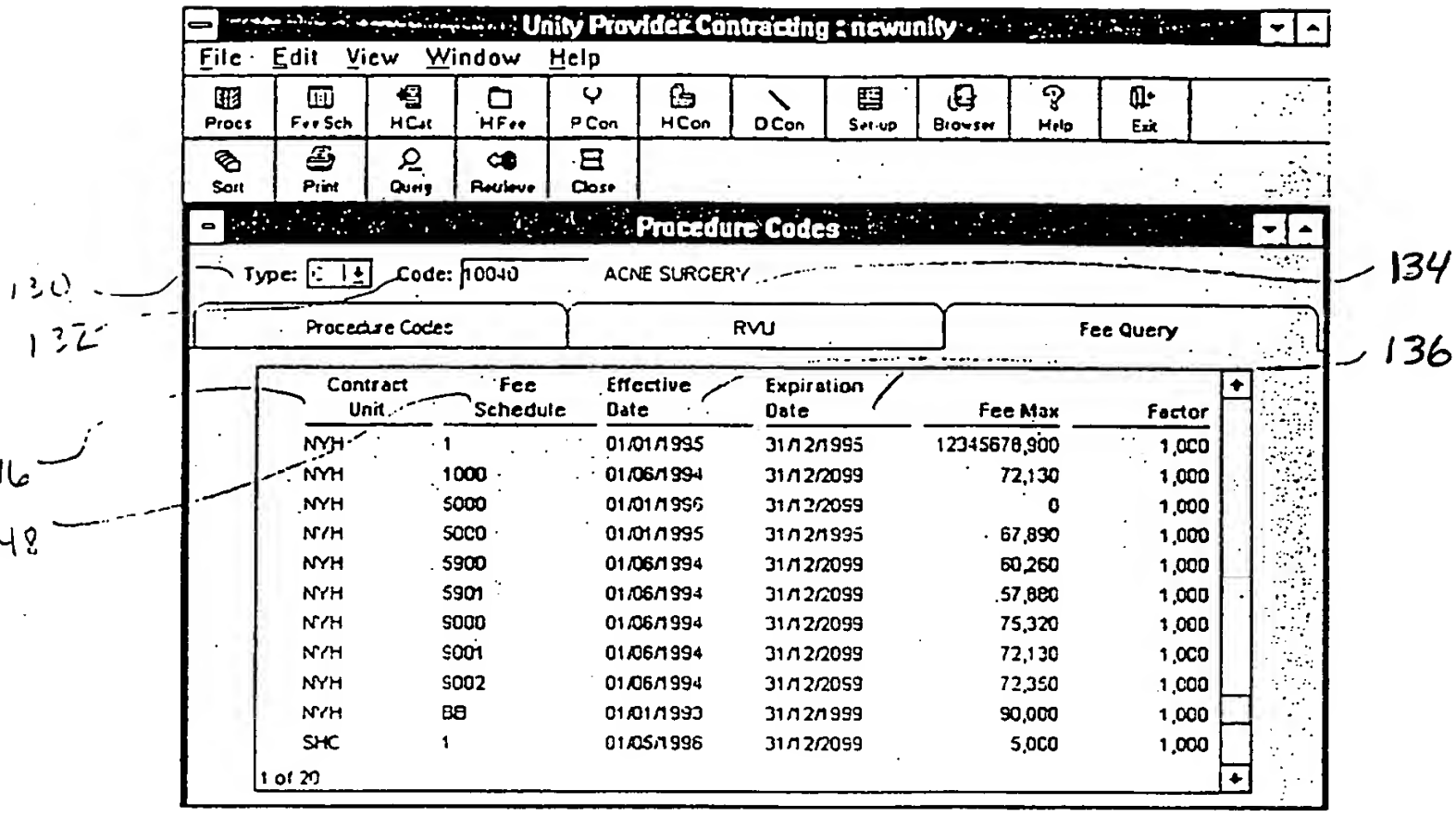
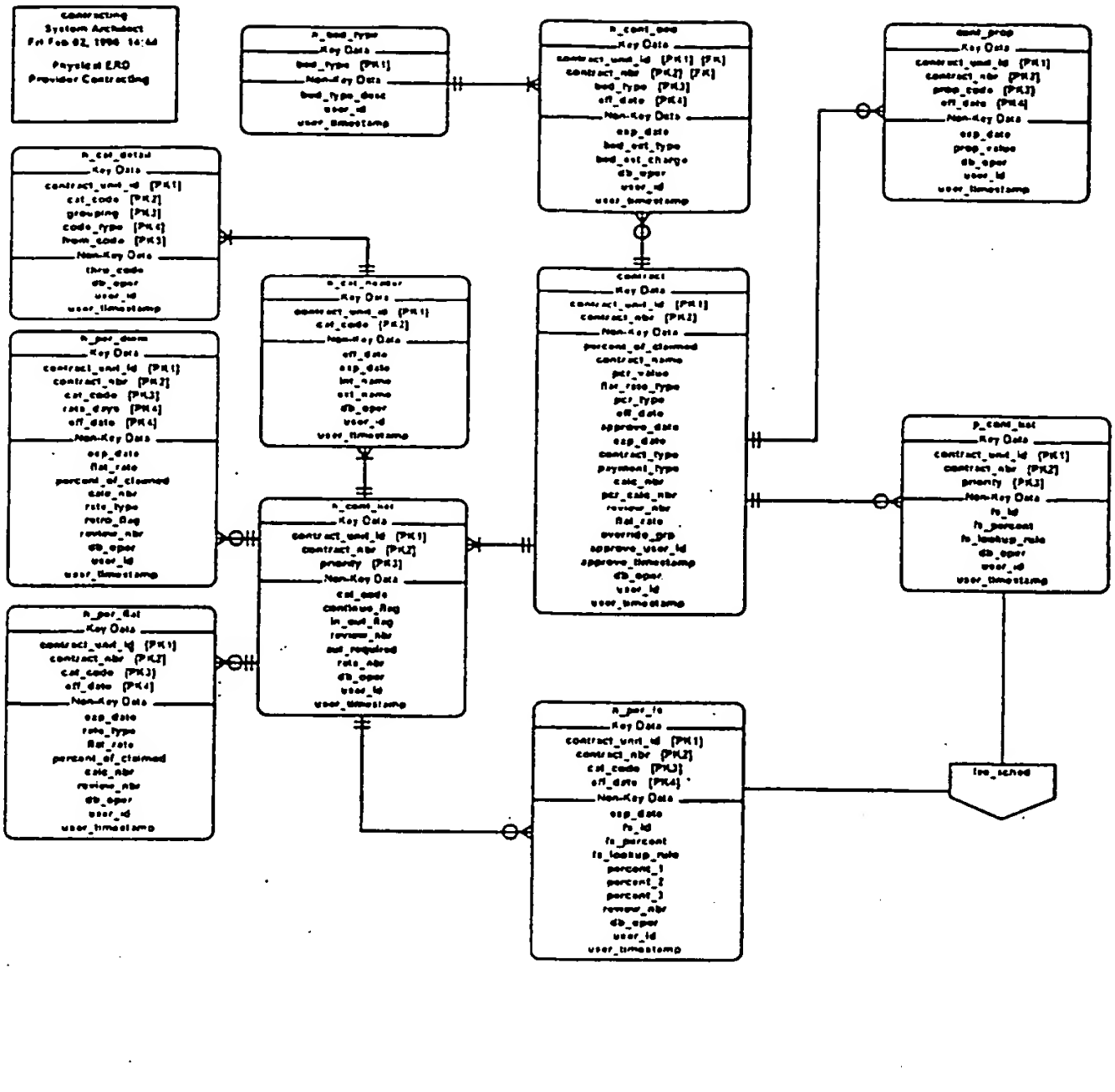

Unity Provider Contracting : newunity
File Edit View Window Help
Procs
Fee Sch
HCat
HFee
PCon
HCon
DCon
Set-up
Browser
Help
Exit
Procedure Codes (Fee Query) Query
Search Criteria: Procedure Code List
Auto Close
Procedure Type: C
Procedure Code: 10000
Through: 12000
Procedure Description:
Search
Clear
Type
Procedure Code
Description
Effective Date
C 10061 DRAINAGE OF SKIN ABSCESS COMPLIC 01/01/1996
C 10020 DRAINAGE OF PILONIDAL CYST 01/01/1996
C 10081 DRAINAGE OF PILONIDAL CYST 01/01/1996
C 10120 REMOVE FOREIGN BODY 01/01/1996
C 10121 REMOVE FOREIGN BODY 01/01/1996
C 10140 INCISION + DRAINAGE OF HEMATOMA, S 01/01/1996
C 10160 PUNCTURE DRAINAGE OF LESION 01/01/1996
6 of 113
Select
Close
130
132
134
136
138
132
137

Fig. 9


Unity Provider Contracting : newunity
File Edit View Window Help
Procs
Fee Sch
HCat
HFee
PCon
HCon
DCon
Set-up
Browser
Help
Exit
Sort
Print
Query
Retrieve
Close
Procedure Codes
Type:
Code: 10040
ACNE SURGERY
Procedure Codes
RVU
Fee Query
Contract Unit
Fee Schedule
Effective Date
Expiration Date
Fee Max
Factor
NYH 1 01/01/1995 31/12/1995 12345678.900 1.000
NYH 1000 01/06/1994 31/12/2099 72.130 1.000
NYH 5000 01/01/1996 31/12/2099 0 1.000
NYH 5000 01/01/1995 31/12/1995 67.890 1.000
NYH 5900 01/06/1994 31/12/2099 60.260 1.000
NYH 5901 01/06/1994 31/12/2099 57.880 1.000
NYH 9000 01/06/1994 31/12/2099 75.320 1.000
NYH 9001 01/06/1994 31/12/2099 72.130 1.000
NYH 9002 01/06/1994 31/12/2099 72.350 1.000
NYH BB 01/01/1993 31/12/1999 90.000 1.000
SHC 1 01/05/1996 31/12/2099 5.000 1.000
1 of 20
130
132
134
136
146
148


Contracting
System Architect
Fri Feb 07, 1998 14:44
Physician ERD
Provider Contracting
p_bad_type
Key Data
bad_type [PK1]
Non-Key Data
bad_type_desc
user_id
user_timestamp
p_cont_bad
Key Data
contract_und_id [PK1] [FK]
contract_nbr [PK2] [FK]
bad_type [PK3]
eff_date [PK4]
Non-Key Data
exp_date
bad_act_type
bad_act_charge
db_oper
user_id
user_timestamp
cont_prop
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
prop_code [PK3]
eff_date [PK4]
Non-Key Data
exp_date
prop_value
db_oper
user_id
user_timestamp
p_cat_detail
Key Data
contract_und_id [PK1]
cat_code [PK2]
grouping [PK3]
code_type [PK4]
from_code [PK5]
Non-Key Data
thru_code
db_oper
user_id
user_timestamp
p_cat_member
Key Data
contract_und_id [PK1]
cat_code [PK2]
Non-Key Data
eff_date
exp_date
int_name
ext_name
db_oper
user_id
user_timestamp
contract
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
Non-Key Data
percent_of_claimed
contract_name
pct_value
flat_rate_type
pct_type
eff_date
approve_date
exp_date
contract_type
payment_type
calc_nbr
pct_calc_nbr
review_nbr
flat_rate
override_grp
approve_user_id
approve_timestamp
db_oper
user_id
user_timestamp
p_per_diem
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
cat_code [PK3]
rate_days [PK4]
eff_date [PK5]
Non-Key Data
exp_date
flat_rate
percent_of_claimed
calc_nbr
rate_type
retro_flag
review_nbr
db_oper
user_id
user_timestamp
p_cont_hist
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
priority [PK3]
Non-Key Data
cat_code
continue_flag
in_out_flag
review_nbr
auth_required
rate_nbr
db_oper
user_id
user_timestamp
p_cont_fac
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
priority [PK3]
Non-Key Data
fs_id
fs_percent
fs_lookup_rule
db_oper
user_id
user_timestamp
p_per_flat
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
cat_code [PK3]
eff_date [PK4]
Non-Key Data
exp_date
rate_type
flat_rate
percent_of_claimed
calc_nbr
review_nbr
db_oper
user_id
user_timestamp
p_per_fs
Key Data
contract_und_id [PK1]
contract_nbr [PK2]
cat_code [PK3]
eff_date [PK4]
Non-Key Data
exp_date
fs_id
fs_percent
fs_lookup_rule
percent_1
percent_2
percent_3
review_nbr
db_oper
user_id
user_timestamp
fee_sched

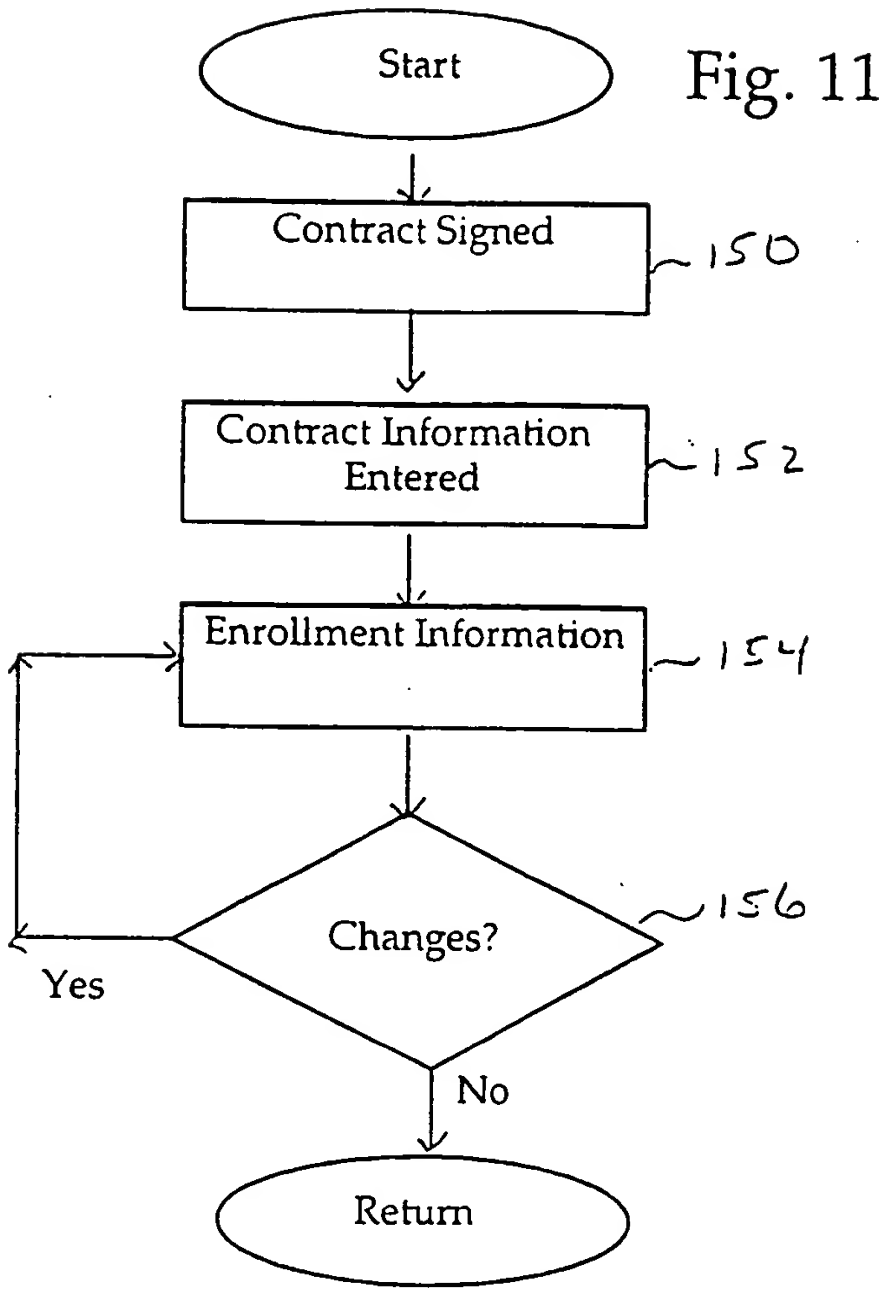

Start
Contract Signed
150
Contract Information Entered
152
Enrollment Information
154
Changes?
156
Yes
No
Return

Fig. 11